

# DoD Global Influenza Surveillance Program: *Influenza Surveillance at AFIOH*

## Overall Lab Surveillance

### Total Specimens Collected

- Collected in Week 14: 48
- Season Total: 2,475

### Total Influenza Isolates

*Includes subtyped isolates*

- Influenza A: 405
- Influenza B: 202

### Total Isolates Subtyped

- A/H1N1: 43
- A/H3N2: 254
- B/HongKong: 58
- B/Shanghai: 11

## Sentinel Site Lab Surveillance

### Sentinel Specimens Collected

- Collected in Week 14: 15
- Season Total: 1,512

### Sentinel Influenza Isolates

*Includes subtyped isolates*

- Influenza A: 302
- Influenza B: 89

### Sentinel Isolates Subtyped

- A/H1N1: 36
- A/H3N2: 190
- B/Hong Kong: 34
- B/Shanghai: 7

## Overseas Research Lab Surveillance

### Research Specimens Collected

- Collected in Week 14: 0
- Season Total: 305

### Research Influenza Isolates

*Includes subtyped isolates*

- Influenza A: 16
- Influenza B: 98

### Research Isolates Subtyped

- A/H1N1: 1
- A/H3N2: 6
- B/Hong Kong: 21
- B/Shanghai: 4

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Week 14

02 - 08 April 2006

### Current WHO Phase of Pandemic Alert: **PHASE 3**

\*Phase 3 = a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans. The designation of phases, including decisions on when to move from one phase to another, is made by the Director-General of WHO. Source: [WHO](#)

### Influenza (02 Oct - Present)

**607 influenza isolates**

**405 Influenza A; 202 Influenza B**

27% of completed specimens were positive for an influenza virus: 18% influenza A; 9% influenza B.

#### *Influenza A*

**A (H1N1): 43**

**A (H3N2): 254**

**Un-subtyped: 108**

#### *Influenza B*

**B (Hong Kong): 58**

**B (Shanghai): 11**

**Un-subtyped: 133**

### Locations of identified influenza viruses



### Vaccination Status

97% of the Active Duty Air Force, 94% of Air National Guard, and 83% of Air Force Reserve are currently vaccinated (as of 10 Apr 06). (Data gathered by MILVAX)

### Update: Human Avian Influenza (H5N1)

- Egypt:** 12st case of human H5N1 confirmed by MoH. Patient was a 18-year-old female from the northern governorate of Minufiyah. Symptoms were developed on 5 April and she was hospitalized on 11 April. She remains hospitalized and is in stable condition. The patient's infection has been linked to direct contact with diseased birds. See [WHO update](#).
- See [pg 6](#) for WHO cumulative cases. See [WHO's situational update](#) for more information.

### Influenza Outbreaks / News

- AFIOH has not been notified of an influenza outbreak at any sentinel site at this time.

### AFIOH Report Overview

This report summarizes the status of all respiratory viral cultures processed at the AFIOH laboratory, which includes specimens collected from DoD beneficiaries at 43 Tri-Service sentinel sites and several non-sentinel sites, as well as from foreign nationals through DoD overseas research laboratories (Armed Forces Institute of Medical Sciences [AFRIMS], the Naval Medical Research Center Detachment [NMRC-D], and the US Army Center for Health Promotion and Preventive Medicine West [CHPPM-W]).

## Overall Laboratory Surveillance

**Week 14 overview.** At this time, 16 sites (9 sentinel, 7 non-sentinel) have shipped 48 specimens that were collected from patients during Week 14. See map to right. Of the specimens with completed results ( $n=16$ ), 75% were positive for influenza (7 influenza A and 5 influenza B).

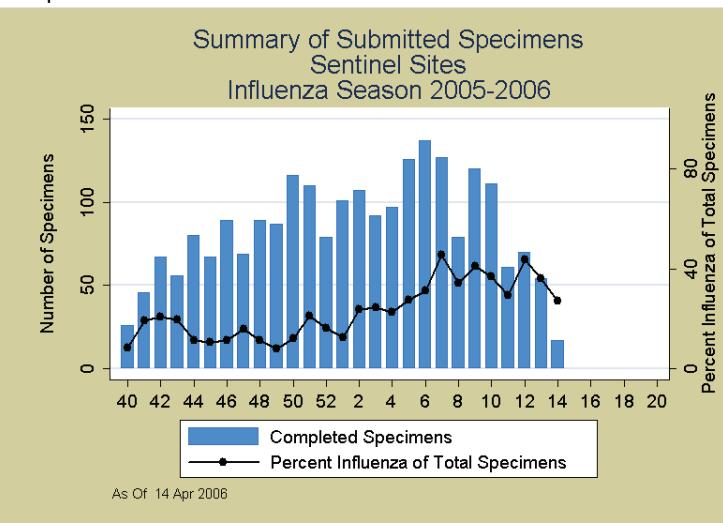
**Season overview.** Since 02 October 2005, 74 sites (38 sentinel, 33 non-sentinel, and 3 overseas research sites) have submitted a total of 2,475 specimens to the AFIOH laboratory. Of these, 91% ( $n=2,261$ ) have a completed result, with 27% ( $n=607$ ) positive for an influenza virus (Graph 1): 18% influenza A; 9% influenza B. Furthermore, 2% ( $n=54$ ) were positive for parainfluenza, 3% ( $n=66$ ) were adenovirus, 0.8% ( $n=18$ ) were enterovirus, 0.9% ( $n=20$ ) were HSV, and 0.7% ( $n=15$ ) were RSV (Graph 2).

MAP: Geographic coverage of DoD Influenza Surveillance\*

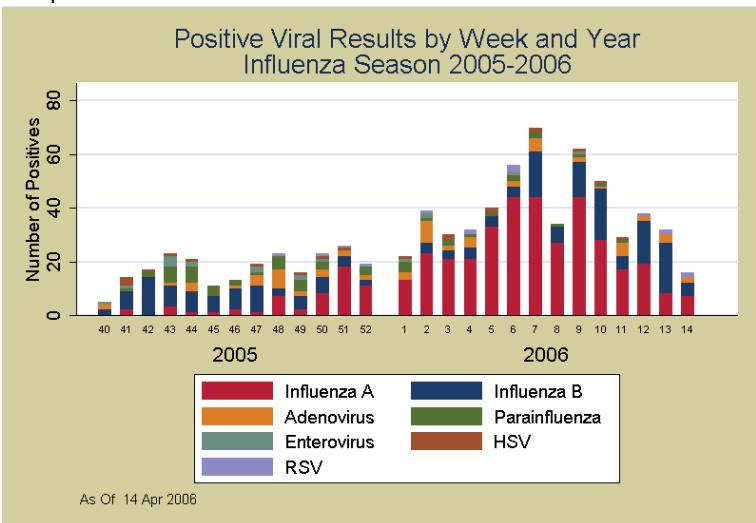


\* As determined from specimen submissions. Even though an entire location is highlighted, surveillance may be limited in scope

Graph 1



Graph 2

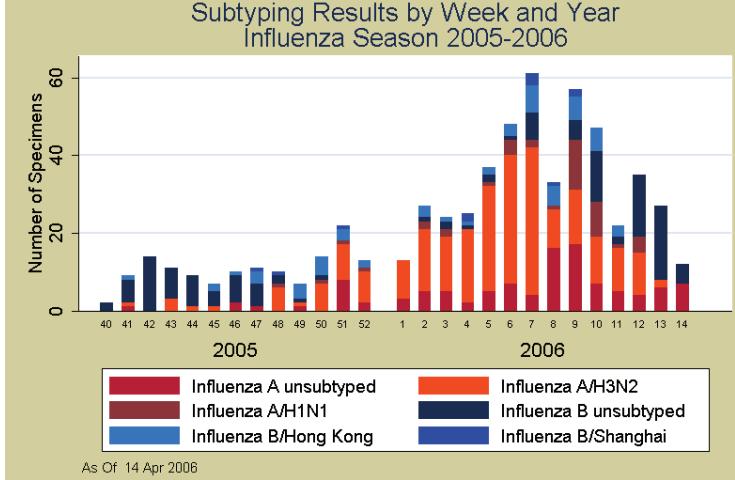


**Influenza Subtype and Sequence overview.** All influenza isolates have been typed, and the AFIOH laboratory plans to subtype all OCONUS isolates and a portion of CONUS isolates. Of the 607 influenza isolates, 60% ( $n=366$ ) have been subtyped: 254 influenza A/H3N2, 43 influenza A/H1N1, 58 influenza B/Hong Kong, and 11 influenza B/Shanghai (Graph 3).

Five (14%) of the H1N1 sub-typed isolates have been sequenced and there are notable genetic differences compared to the currently used influenza A/New Caledonia/20/99 vaccine strain.

Additionally, several H3N2 sub-typed isolates have been sequenced and appear to closely match the vaccine strain.

Graph 3



The following information is gathered from the Influenza Surveillance Questionnaires submitted primarily by sentinel sites.

**Vaccine Effectiveness.** Vaccination status was identified in 41% ( $n=232$ ) of the patients positive for influenza. Of these, 40% ( $n=93$ ) were vaccinated > 2 weeks prior to infection (1 patient was vaccinated 2 days prior to infection). Isolates from these patients have been sub-typed as H3N2 ( $n=32$ ), H1N1 ( $n=7$ ), and B Hong Kong ( $n=2$ ).

**Hospital/Quarter status.** Two percent ( $n=25$ ) of patients with surveillance questionnaires were hospitalized. Of these, 16% ( $n=4$ ) were positive with influenza (3 unvaccinated patients positive for influenza A and 1 vaccinated patient positive for influenza B) and 87% ( $n=21$ ) were negative for a respiratory virus. Additionally, 32 influenza A and 4 influenza B-positive patients were placed on "quarters" for at least 24 and no more than 72 hours (78% [ $n=28$ ] of these patients were vaccinated).

## Regional Influenza Activity, 02 October 2005 - Present

### Influenza A

(H1N1) - Identified in Asia (S. Korea, Japan, Saipan), the Middle East (Qatar, Kuwait), and North America (U.S.).

(H3N2) - Identified in Asia (S. Korea, Saipan, Guam, and Japan), the Middle East (Kuwait), Europe (Italy, Turkey, the U.K.), and North America (U.S.).

WHO also reported both influenza A/H3N2 and A/H1N1 viruses in the United States and Japan.

### Influenza B

(Hong Kong) - Identified in Europe (Germany, the U.K.), the Middle East (Kuwait), South America (Peru), and North America (U.S.).

(Shanghai) - Identified in the Middle East (Kuwait), Central America (Honduras), South America (Peru), and North America (U.S.).

Although AFIOH did not detect influenza B in Asia, WHO reported influenza B isolates in Japan.

Please refer to Table 1 for isolate identification by region and site.

**Table 1. Influenza by REGION and SITE**

Site by REGION	Sentinel Status	Influenza A			Influenza B			Total Influenza		
		Not-subtyped	H3N2	H1N1	Not-subtyped	Hong Kong	Shanghai			
<b>OCONUS</b>										
<b>Asia</b>										
121st Army, S. Korea	Sentinel		4	3				7		
Osan AB, S. Korea	Sentinel		4	3				7		
Andersen AFB, Guam	Sentinel		3					3		
Camp Zama, Japan	Sentinel	2	19	10				31		
Kadena AB, Japan	Sentinel	1	5					6		
NH Okinawa, Japan	Sentinel		3					3		
NH Yokosuka, Japan	Sentinel		8	2				10		
Yokota AB, Japan	Sentinel	1	3	10				14		
Misawa AB, Japan	Sentinel		1					1		
Saipan, CMNI	Research lab		6	1				7		
<b>Europe</b>										
Aviano AB, Italy	Sentinel		1					1		
Incirlik AB, Turkey	Sentinel		2					2		
Ramstein AB, Germany	Sentinel				19	2		21		
RAF Lakenheath, U.K.	Sentinel	4	6		13	18		41		
<b>Deployed</b>										
Al Udeid AB, Qatar	Sentinel	2	2	1	1			6		
Ali Al Salem AB, Kuwait	Sentinel		1			1		2		
Camp Arifjan, Kuwait	Sentinel		3	1				4		
Camp Buehring, Kuwait	Sentinel						1	1		
<b>Central America</b>										
CHPPM-W, Honduras	Research lab				1		3	4		
<b>South America</b>										
NMRC-D, Peru	Research lab	9			72	21	1	103		
<b>CONUS</b>										
<b>East North Central</b>										
Scott AFB, IL	Sentinel	23	19	3	2		3	50		
Wright-Patterson AFB, OH	Non-Sentinel		1		1			2		
<b>East South Central</b>										
Maxwell AFB, AL	Non-Sentinel	4	11					15		
<b>New England</b>										
Hanscom AFB, MA	Non-Sentinel		1					1		
NHC New England, CT	Sentinel		4					4		
<b>Mid Atlantic</b>										
McGuire AFB, NJ	Sentinel	4	13			1		18		
<b>South Atlantic</b>										
NAB Little Creek, VA	Sentinel	2	1	5	5	1		14		
Shaw AFB, SC	Non-Sentinel	1	5		1			7		
<b>Mountain</b>										
USAF Academy, CO	Sentinel	9	23		10	7		49		
Buckley AFB, CO	Non-Sentinel	1		1				2		
Davis-Monthan AFB, AZ	Non-Sentinel		1					1		
Luke AFB, AZ	Non-Sentinel	3	3					6		
<b>Pacific</b>										
CGS Ketchikan, AK	Sentinel		2					2		
Elmendorf AFB, AK	Sentinel	1	2					3		
NH Bremerton, WA	Sentinel	2	4					6		
Tripler AMC, HI	Sentinel		14	1				15		
NMC San Diego, CA	Sentinel		1					1		
Travis AFB, CA	Sentinel	3						3		
Edwards AFB, CA	Non-Sentinel		2		1			3		
<b>South Atlantic</b>										
Andrews AFB, MD	Sentinel	9	6			1		16		
NH Bethesda, MD	Sentinel	7	11	2	1			21		
<b>West South Central</b>										
Barksdale AFB, LA	Non-Sentinel		1					1		
Sheppard AFB, TX	Sentinel	4	15		2	3	3	27		
Brooks City-Base, TX	Non-Sentinel	7	13					20		
Goodfellow AFB, TX	Non-Sentinel		1					1		
Lackland AFB, TX	Non-Sentinel	4	13		1			18		
Randolph AFB, TX	Non-Sentinel		1					1		
Tinker AFB, OK	Non-Sentinel	5	15		3	3		26		
<b>Total Influenza</b>		108	254	43	133	58	11	607		

**Area of Responsibility (AOR)**

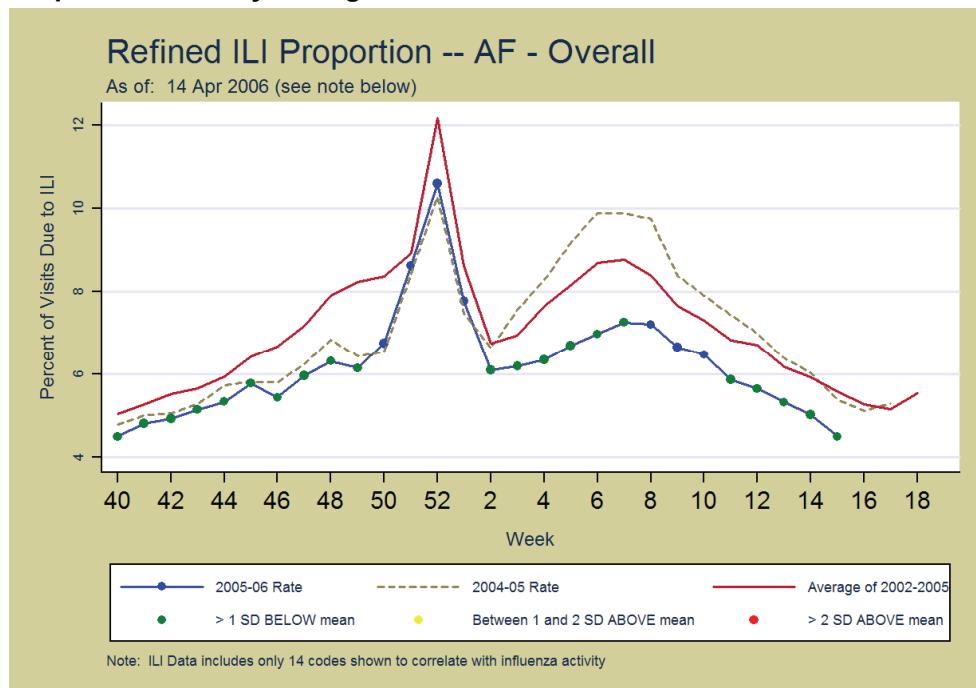
Note: Sentinel sites are distributed among the AOR as follows: 100% of the submitting CENTCOM and EUCOM sites, 93% of the PACOM sites, and 31% of the NORTHCOM sites. The "OTHER" AOR category includes specimens collected from non-DoD beneficiaries from the local clinics surrounding the overseas research lab locations and are not considered sentinel sites.

**Table 2. Specimens Collected by Area of Responsibility (AOR), Week 14 and Season Totals.**

Result	Area of Responsibility										ALL SITES	
	CENTCOM		EUCOM		NORTHCOM		PACOM		OTHER			
	Week	Season	Week	Season	Week	Season	Week	Season	Week	Season		
Influenza A	1	10		13	5	264	1	109		9	405	
Influenza B		3		52	5	49				98	202	
Adenovirus		1		7	2	38			7		13	
Parainfluenza		1		11		30		3		9	54	
Enterovirus		2		5		4		3		4	18	
HSV		1		4		3		2		10	20	
RSV			1	3	1	11			1		15	
Negative		64		156		778		301		182	1481	
Pending		1	1	1	28	42	3	6		164	214	
<b>TOTAL RECEIVED</b>	<b>1</b>	<b>83</b>	<b>2</b>	<b>252</b>	<b>41</b>	<b>1219</b>	<b>4</b>	<b>432</b>	<b>0</b>	<b>489</b>	<b>2475</b>	

**Influenza-Like Illness (ILI)\***

Overview. As of 14-Apr-06. Influenza-like illness (ILI) activity among Air Force MTFs steadily declining for Week 14, and is 1 standard deviation (SD) below the mean. The SD is calculated weekly. It is important to note that data may vary from next week's graph.

**Graph 4. ILI Activity among Air Force MTFs**

\*Influenza-like illness (ILI) activity is gathered from the Standard Ambulatory Data Registry (SADR). The data are cleaned and a summary total of ICD-9's that match a smaller, but more specific and sensitive list of ICDs than is in the ESSENCE tool, are presented (Graph 3). The Surveillance Team at AFIOH are in the process of creating a DoD-wide ILI graph.

### Additional Influenza Surveillance: Army MEDCENs

The Army performs influenza surveillance at 6 Army Medical Center (MEDCEN) locations (Dwight David Eisenhower Army Medical Center [DDEAMC], Walter Reed Army Medical Center [WRAMC], Brooke Army Medical Center [BAMC], Madigan Army Medical Center [MAMC], Tripler Army Medical Center [TAMC], and Landstuhl Regional Medical Center [LRMC]), two of which are included in AFIOH's sentinel site surveillance network (see map to right). Any influenza positive specimen identified from TAMC or LRMC in the AFIOH portion of this report are also included in the "Army MEDCEN" report.



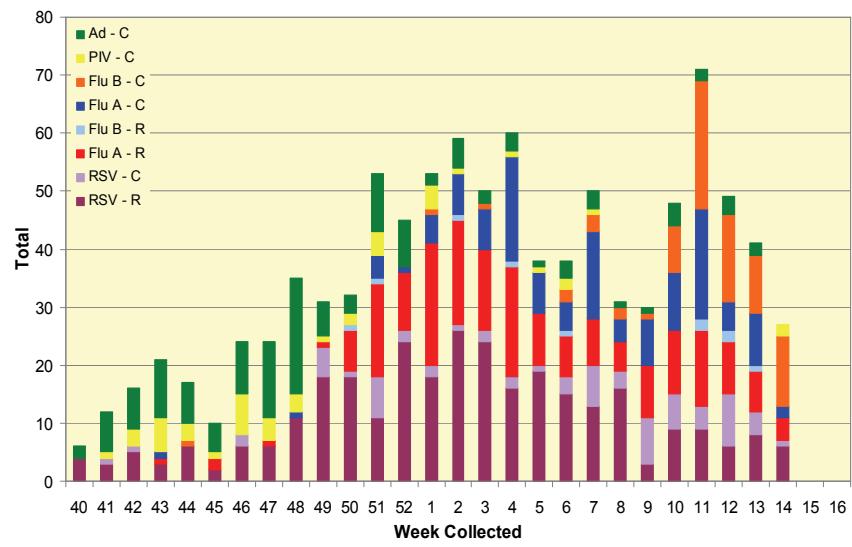
The Army MEDCEN sites are major medical centers equipped with the capability of detecting respiratory viruses, including influenza. It is important to note that the methodology varies at each site (i.e., testing procedures include direct fluorescent-antibody [DFA], various rapid antigen tests, culture, and polymerase chain reaction [PCR]) and reporting is routine, but varies from site to site (i.e., weekly, bi-weekly, monthly). The information reported and shared with AFIOH describes results from the individual MEDCENs and does not include demographic information at this time.

**Graph 5. Positive Respiratory Viruses, ARMY MEDCEN\***

**Season overview:** Since 02 October 2005, **4,442** specimens were collected and tested. Of these, 9% (n=408) were positive for an influenza virus: 7% (n=320) influenza A and 2% (n=88) influenza B. Furthermore, 8% (n=377) were positive for RSV, 1% (n=47) were parainfluenza, and 3% (n=139) were adenovirus. See Graph 5 for a season overview.

**Duplicate data.** At this time, 15 influenza A viruses are identified in both the AFIOH report and Army MEDCEN report. Both TAMC and LRMC send selected positive specimens to AFIOH for sub-typing. Fourteen (93%) of the influenza isolates collected from Tripler AMC have been identified as A/H3N2 and one (7%) has been identified as A/H1N1.

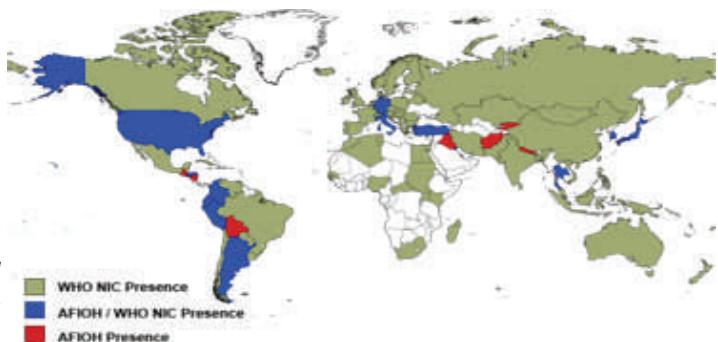
**POC for Army MEDCEN surveillance:** MAJ Wade Aldous



### Contributions to National and Global Influenza Surveillance

**It is important to note that although a country is highlighted, surveillance may be limited in scope.** AFIOH provides surveillance data from 21 countries - 8 countries (Bolivia, El Salvador, Guatemala, Iraq, Kyrgyzstan, Nepal, Nicaragua, and Qatar) are not otherwise included in the current WHO network.

**Note:** Map describes countries submitting specimens to AFIOH and does not include all DoD contributing countries (i.e., NAMRU-2 and NAMRU-3 surveillance described on page 7).



### Data Sharing

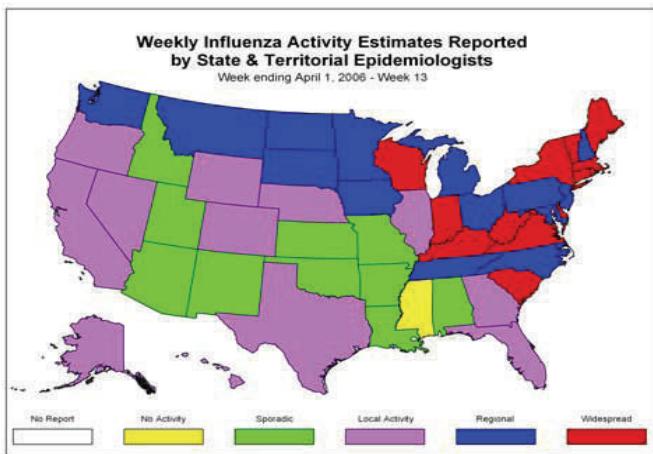
AFIOH electronically reports data to CDC using the Public Health Laboratory Information System (PHLIS). The data shared is incorporated into WHO's and CDC's influenza surveillance summaries. Additionally, data from Texas military sites are reported to the Texas Department of State Health Services (TDSHS).

### CDC / WHO Influenza Surveillance

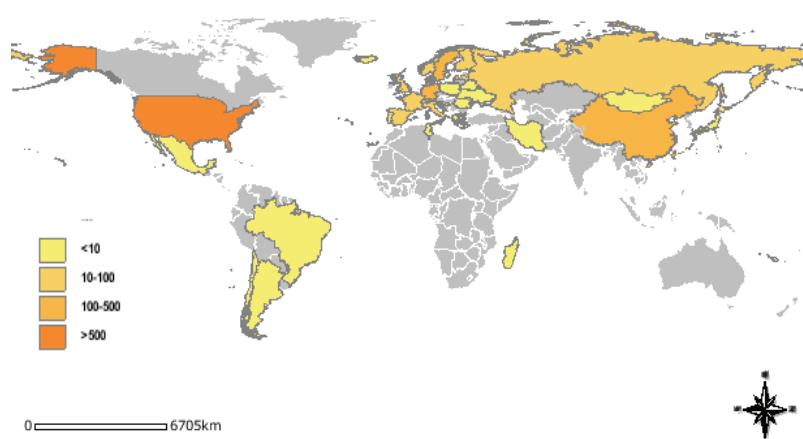
CDC reported influenza activity continuing at the same level as recent weeks during **Week 13**. Of the specimens tested during Week 13, 16.6% were positive for an influenza virus (see CDC map below). Since 02 October 2005, a total of 12.5% of specimens have tested positive for influenza in the United States.

WHO data may vary slightly from week to week. The WHO map below indicates total influenza positive specimens tested for Week 12 (see WHO map below). Please refer to [WHO's website](#) for detailed information.

CDC U.S. Influenza Surveillance Map<sup>1</sup>



WHO International Influenza Surveillance Map<sup>2</sup>



1. National Influenza Activity (CDC): <http://www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm>

2. International Influenza Activity (WHO): <http://gamapserver.who.int/GlobalAtlas/home.asp>

### Influenza Vaccine Composition for 2006-2007 influenza season

WHO has recommended the composition of the 2006-2007 trivalent influenza vaccine for the northern hemisphere influenza season (November 2006 to April 2007) to contain:

an A/New Caledonia/20/99(H1N1)-like virus;

an A/Wisconsin/67/2005(H3N2)-like virus;

a B/Malaysia/2506/2004-like virus

The two of the three components (the influenza A [H3N2] and the influenza B components) in the WHO recommendation have changed from the current 2005-2006 season vaccine components. See the [WHO recommendation report](#) for more information on the circulating strains, antigenic characteristics, and vaccine studies identified through the WHO influenza network.

### Avian Influenza Updates

**Human Avian Influenza.** 194 cases of lab-confirmed avian influenza (56% case fatality rate). The table was gathered from the [WHO website](#) on 14 April 2006 and has been updated as of 12 April 2006.

Country	2003 cases	2003 deaths	2004 cases	2004 deaths	2005 cases	2005 deaths	2006 cases	2006 deaths	Total cases	Total deaths
Azerbaijan	0	0	0	0	0	0	8	5	8	5
Cambodia	0	0	0	0	4	4	2	2	6	6
China	0	0	0	0	8	5	8	6	16	11
Egypt	0	0	0	0	0	0	4	2	4	2
Indonesia	0	0	0	0	17	11	14	12	31	23
Iraq	0	0	0	0	0	0	2	2	2	2
Thailand	0	0	17	12	5	2	0	0	22	14
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
<b>Total</b>	<b>3</b>	<b>3</b>	<b>46</b>	<b>32</b>	<b>95</b>	<b>41</b>	<b>50</b>	<b>33</b>	<b>194</b>	<b>109</b>

Total number of cases includes number of deaths.

WHO reports only laboratory-confirmed cases.

## DoD Global Influenza Surveillance Program Background

### DoD-GEIS Influenza Surveillance Network

The DoD Global Influenza Surveillance Program was established by the Global Emerging Infections Surveillance and Response System (GEIS) in 1997. The program established an influenza surveillance network, which includes the Air Force Influenza Surveillance Network (global influenza surveillance established in 1976), Navy (recruit adenovirus surveillance established in 1996), and the DoD overseas medical research facilities (i.e., the Naval Medical Research Unit located in Cairo, Egypt [NAMRU-3] and the Naval Medical Research Unit located in Jakarta, Indonesia [NAMRU-2]).

### AFIOH Influenza Surveillance Network

In 1976, the US Air Force Medical Service began conducting routine lab-based surveillance of influenza throughout the world. Efforts were expanded when it became part of the DoD-GEIS influenza surveillance network in 1997. AFIOH manages the Air Force surveillance program that includes global influenza surveillance among DoD beneficiaries at 43 tri-service sentinel sites (including deployed locations in Iraq, Qatar, Kuwait, and Kyrgyzstan), several non-sentinel sites, two DoD overseas medical research laboratories (the Armed Forces Research Institute of Medical Sciences located in Bangkok, Thailand [AFRIMS], and the U.S. Naval Medical Research Center-Detachment [NMRC-D] located in Lima, Peru) that collect specimens from local residents in Nepal, Thailand, Argentina, Bolivia, Ecuador, Peru, and Colombia, and the US Army Center for Health Promotion and Preventive Medicine-West (CHPPM-W), that collect specimens from local residents in El Salvador, Guatemala, and Honduras.

### Sentinel Site Surveillance

Sentinel site surveillance describes specimens submitted by the 43 sentinel sites using the protocol of collecting 6-10 specimens each week from patients meeting the ILI case definition (**fever  $\geq 100.5^{\circ}\text{F}$  and cough or sore throat**) and completing the "Influenza Surveillance Questionnaire" (see [our website](#) to review the questionnaire and the Sentinel Site Surveillance Report). Two sentinel sites, Tripler Army Medical Center (AMC), located in Hawaii, and Landstuhl Regional Medical Center (RMC), located in Germany, send selected influenza positive specimens to AFIOH to be further characterized. These sites are major medical centers and have established laboratories capable of detecting influenza. Their involvement in the DoD-wide program is valued due to their mission and geographical location.

### Processing Methods

Specimens are processed in BSL-2 conditions (BSL-3 available) and tested for influenza, parainfluenza, adenovirus, enterovirus, herpes simplex virus (HSV), and respiratory syncytial virus (RSV). Specimens are held up to 14 days before a negative result is given. All influenza isolates are typed as A or B and a portion are subtyped using hemagglutination-inhibition (HI) or polymerase chain reaction (PCR) procedures. A portion of these isolates undergo molecular sequencing.

### 2005-2006 Trivalent Influenza Vaccine Composition

#### Northern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)
- B/Shanghai/361/2002-like

#### 2006 Southern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)\*
- B/Malaysia/2506/2004

\*The currently used vaccine virus is A/New York/55/2004

This report was prepared on **14 April 2006**. For an expanded view of the information in this report, visit our website at <https://gumbo.brooks.af.mil/pestilence/Influenza/>. Also available on our website is a list of previous weekly surveillance reports, program information for sentinel sites (including an educational briefing and instruction pamphlets for clinic staff), and an overview of historical data.

Please visit the [DoD-GEIS website](#) for an overview of influenza surveillance at all collaborating DoD-GEIS organizations.

#### AFIOH Contact Information

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